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PATENT SPECIFICATION



Application Date: Sept. 2, 1935. No. 24470/35.

461,570

(Patent of Addition to No. 400,742: dated Aug. 8, 1932.)

Complete Specification Left: Sept. 2, 1936.

Complete Specification Accepted: Feb. 19, 1937.

PROVISIONAL SPECIFICATION

Improvements in the Manufacture and Production of the Transparent Parts of Metal Vapour Lamps and the like

We, I. G. FARBEINDUSTRIE AKTIEN-GESELLSCHAFT, of Frankfort-on-Main, Germany, a Joint Stock Company organized under the Laws of Germany, and 5 GEORGE WILLIAM JOHNSON, a British Subject, of 47, Lincoln's Inn Fields, in the County of London, Gentleman, do hereby declare the nature of this invention to be as follows:—

10 For instruments or apparatus which contain glass parts which are exposed to attack by liquid or vaporous alkali metals, light metals or the like, in particular for illuminating tubes having alkali metal vapour fillings or other discharge tubes with atomising light metal electrodes, there has hitherto been no material which, when used for the preparation of such parts, could withstand for long periods the 15 attack of the metals or their vapours. It has already been proposed for the purpose of overcoming the said drawback to replace the silicic acid in the glass to a large extent by boric acid, but glasses having a 20 high content of boric acid have the drawback that they have but slight resistance to moisture and substances in the atmosphere. In order to protect such glasses, it is therefore necessary to jacket or encase them with other resistant glasses.

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It has now been found that glasses com-

posed in accordance with the specification No. 400,742 and containing Al_2O_3 in an excess above the molecular ratio $Al_2O_3 : P_2O_5 = 1:1$ up to 30 per cent. by weight of the glass, do not have the said drawbacks. In addition to resistance to the action of fused or vaporous alkali metals, light metals or the like, they have a high resistance to water and a very good 40 permeability to light so that, for example, illuminating tubes which emit mainly visible light and in which the transparent parts are exposed to the attack of fused or vaporous alkali metals, light metals or the 45 like may be prepared from the said glasses. The said glasses are thus very suitable as materials for the light-permeable parts of sodium vapour lamps which have recently become important for the 50 dazzle-free illumination of traffic roads. In this and similar cases in which the permeability of the glass for ultra-violet light is not important or may even be undesirable, the raw materials used need not be 55 free from iron, titanium and other constituents impairing the permeability for ultra-violet light and cheaper raw materials may therefore be used.

Glasses of the following compositions 60 have proved especially suitable.

	K ₂ O	Na ₂ O	CaO	BaO	MgO	SiO ₂	Al ₂ O ₃	B ₂ O ₃	P ₂ O ₅	
65	A	9.0	—	4.5	27.2	—	9.0	24.6	9.7	16.0
	B	—	10.0	—	10.0	10.0	5.0	31.3	25.0	8.7
	C	—	—	—	10.0	13.0	10.0	31.3	20.0	15.7
	D	—	—	—	10.0	10.0	20.0	26.3	25.0	8.7
	E	3.0	—	—	10.0	5.0	20.0	28.3	25.0	8.7

Dated this 2nd day of September, 1936.

J. Y. & G. W. JOHNSON,
47, Lincoln's Inn Fields, London,
W.C. 2,
Agents.

[Price 1/-]

Price 4s 6d

COMPLETE SPECIFICATION

Improvements in the Manufactur and Pr ducti n of th Transparent Parts of Metal Vapour Lamps and the like

We, I. G. FARBENINDUSTRIE AKTIEN-
GESELLSCHAFT, of Frankfort-on-Main,
Germany, a Joint Stock Company organ-
ized under the Laws of Germany, and
5 GEORGE WILLIAM JOHNSON, a British
Subject, of 47, Lincoln's Inn Fields, in
the County of London, Gentleman, do
hereby declare the nature of this invention
10 and in what manner the same is to be
performed to be particularly described and
ascertained in and by the following state-
ment:—

For instruments or apparatus which
contain glass parts which are exposed to
15 attack by liquid or vaporous alkali metals,
light metals or the like, in particular for
illuminating tubes having alkali metal
vapour fillings or other discharge tubes
20 with atomising light metal electrodes,
there has hitherto been no material which
when used for the preparation of such
parts, could withstand for long periods
the attack of the metals or their vapours.
It has already been proposed for the pur-
25 pose of overcoming the said drawback to
replace the silicic acid in the glass to a
large extent by boric acid, but glasses
having a high content of boric acid have
the drawback that they have but slight
30 resistance to moisture and substances in
the atmosphere. In order to protect such
glasses, it is therefore necessary to jacket
or encase them with other resistant
glasses.

It has now been found that glasses com- 85
posed in accordance with the specification
No. 400,742 and containing besides not
more than 25 per cent. by weight of silica
 Al_2O_3 in an excess above the molecular
ratio $Al_2O_3 : P_2O_5 = 1:1$ up to 30 per cent. 40
by weight of the glass, preferably between
12 and 30 per cent. do not have the said
drawbacks. In addition to resistance to
the action of fused or vaporous alkali
metals, light metals or the like, they have 45
a high resistance to water and a very good
permeability to light, so that, for example,
illuminating tubes which emit mainly
visible light and in which the transparent
parts are exposed to the attack of fused or 50
vaporous alkali metals, light metals or
the like may be prepared from the said
glasses. The said glasses are thus very
suitable as materials for the light-perme-
able parts of sodium vapour lamps which 55
have recently become important for the
dazzle-free illumination of traffic roads.
In this and similar cases in which the per-
meability of the glass for ultra-violet
light is not important or may even be un- 60
desirable, the raw materials used need not
be free from iron, titanium and other con-
stituents impairing the permeability for
ultra-violet light and cheaper raw
materials may therefore be used. 65

Glasses of the following compositions
have proved especially suitable.

	K ₂ O	Na ₂ O	CaO	BaO	MgO	SiO ₂	Al ₂ O ₃	B ₂ O ₃	P ₂ O ₅	
70	A	9.0	—	4.5	27.2	—	9.0	24.6	9.7	16.0
	B	—	10.0	—	10.0	10.0	5.0	31.3	25.0	8.7
	C	—	—	—	10.0	13.0	10.0	31.3	20.0	15.7
	D	—	—	—	10.0	10.0	20.0	26.3	25.0	8.7
	E	3.0	—	—	10.0	5.0	20.0	28.3	25.0	8.7

Having now particularly described and
ascertained the nature of our said inven-
75 tion and in what manner the same is to
be performed, we declare that what we
claim is:—

1. Apparatus containing glass parts
80 which are exposed to attack by liquid or
vaporous alkali metals, light metals or
the like, the said glass being composed in
accordance with Specification No. 400,742
and containing besides not more than 25

per cent. by weight of silica Al_2O_3 in an 85
excess above the molecular ratio
 $Al_2O_3 : P_2O_5 = 1:1$ up to 30 per cent. by
weight of the glass, preferably between
12 and 30 per cent.

2. Apparatus containing glass parts 90
which are exposed to attack to liquid or
vaporous alkali metals, light metals or the
like, the said glass having any of the
compositions herein specified as proving
especially suitable. 95

Dated this 2nd day of September, 1935. J. Y. & G. W. JOHNSON,
47, Lincoln's Inn Fields, London,
W.C. 2,
Agents.

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